Weston Solutions, Inc.
1435 Garrison Street, Suite 100
Lakewood, Colorado 80215
303-729-6100 • Fax: 303-729-6101
www.westonsolutions.com

CONFIDENTIAL MEMORANDUM

Date: March 24, 2014

To: Robert Parker, Site Assessment Manager, EPA Region 8, Denver, Colorado

From: Natalie Quiet, START- Project Manager, Weston Solutions, Lakewood, CO

RE: Preliminary Hazard Ranking System Score
Columbia Falls Aluminum Company (CFAC)
Columbia Falls, Flathead County, Montana
TDD: 0004/1305-04
DCN: W0004.1A.00136
WO#: 20408.012.004.0004.00

A preliminary Hazard Ranking System (HRS) score of 59.81 was derived for the Columbia Falls Aluminum Company (CFAC) site located in Columbia Falls, Flathead County, Montana (the Site), as part of a Site Reassessment (SR). The SR was conducted by Weston Solutions, Inc. (WESTON) and is reported separately. The groundwater migration pathway was evaluated based on an observed release of contaminants that has affected a private-use well which supplies five homes in the study area. The surface water migration pathway was evaluated on an observed release to the Flathead River of site related contaminants. The soil exposure pathway was evaluated based on the presence of arsenic, cadmium, chromium, and lead at ground surface and slightly accessible to the public. The air migration pathway was not evaluated as part of this SR.

The Site is located approximately 2.0 miles northeast from the population center of Columbia Falls, Flathead County, Montana on Aluminum Drive in Township 30N, Range 20W, Section 3 at Universal Transverse Mercator (UTM) coordinates 712139.73 E and 5363972.34 N. The closest residences are approximately 1 mile north, southeast, and west of the Site. The Site covers approximately 700 acres and is bound by the Flathead River to the south, Teakettle Mountain to the east, Cedar Creek Reservoir to the north, and Cedar Creek to the west. The plant is a Vertical Stud Soderberg aluminum reduction facility that has not operated since October 31, 2009.

The Site includes numerous buildings and industrial operating facilities such as offices, warehouses, fabrication, laboratory, washhouse, paste plant, coal tar pitch tanks, pump houses, and the main pot line facility. Features on the Site include percolation ponds, leachate ponds, sludge ponds, sewage treatment ponds, cathode soaking pits, closed and operational landfills.

The HRS scoresheets, which were generated using QuickScore software, version 3.0.5, are attached. The following information and assumptions were used to derive the HRS score.

Sources:

For the purposes of this HRS scoring, three sources were evaluated: 1) the north percolation ponds covering approximately 70 acres found in the central part of the site; 2) the southern percolation ponds that are immediately adjacent to the Flathead River and cover approximately 62 acres; and 3) some of the landfills and waste ponds found on the eastern portion of the Site. The first two sources are available to all pathways: the landfills and waste ponds are only available to the groundwater and surface water pathways. Data for the sources were collected by the Superfund Technical Assessment and Response Team (START) for this SR. Contaminants associated with the first percolation pond source are chrysene, fluoranthene, pyrene, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, beta-bhc, dieldrin, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, gamma-chlordane, heptachlor epoxide, and methoxychlore, aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, calcium, chromium, cobalt, copper, cyanide, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, sodium, thallium, vanadium, zinc, and fluoride. Contaminants associated with the southern percolation pond source near the river include dimethylphthalate, benzo(b)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, pyrene, endrin ketone, gamma-chlordane, aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, cyanide, iron, lead, magnesium, manganese, mercury, nickel, potassium, sodium, vanadium, zinc, and fluoride. Contaminants associated with the landfill source (identified by groundwater monitoring wells) include aluminum, arsenic, chromium, barium, calcium, chromium, cobalt, copper, cyanide, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, sodium, vanadium, zinc, fluoride, and nitrate/nitrite as N.

The landfill source is somewhat problematic, as the contaminants associated with it were derived by looking at groundwater contamination compared to background instead of collecting samples of the waste by puncturing the caps. Should this Site be recommended for listing, it may be necessary to sample the landfills and waste ponds instead of extrapolating from the surrounding monitoring wells.

The hazardous waste quantity generated for the Site is 10,000, due to the large size of the percolation ponds and landfills. Although several contaminants are associated with the sources, the ones that most impact the site score are as follows: arsenic, cadmium, chromium, copper, cyanide, dieldrin, lead, and manganese.

Groundwater Migration Pathway:

Groundwater at the Site is documented to have been historically and currently used for potable supplies. There are over 500 private wells found within the four mile radius that are used for potable supplies, the nearest are located within 0.25 miles of the Site. The City of Columbia Falls provides municipal water to 1,040 connections from two wells found more than three miles

away from the Site. These residents have been evaluated as potential targets as they relate to the Site score.

An Observed Release (OR) to groundwater was documented for aluminum, copper, cyanide, iron, manganese, potassium, sodium, and zinc.

Five homes were evaluated as having Actual Contamination Level II based on an observed release of cyanide to the single well providing them with potable water. This single well will produce a waste characteristics value of 100.

Based on the presence of Level II actual contamination and potential targets, the groundwater migration pathway score is a 65.54.

Surface Water Migration Pathway:

The overland drainage pathway from the Site travels less than 100 feet to the south before entering the Flathead River and beginning the 15 mile target distance limit (TDL). The Flathead River flows west-southwest before expiring without encountering any surface water intakes. The entire river is considered a trout fishery as well as habitat for the federally endangered Bull trout, and has been evaluated as such. Wetlands and the ranges of several other threatened or endangered species are mentioned in the study area, but have not been specifically identified along the TDL and as such aren't evaluated. An observed release to surface water was documented with aqueous samples for copper, cyanide, manganese, potassium, sodium, vanadium, and zinc. Sediment samples showed an observed release of chrysene and cyanide. This means that the fishery and sensitive environment for the Bull trout are both subject to the Actual Contamination evaluation

Drinking Water Threat Targets

- There is no documentation supporting the presence of any surface water intakes on the 15 mile TDL of the surface water pathway. As such the drinking water portion of the surface water pathway was not evaluated.

Human Food Chain Threat Targets

- There is documentation supporting the presence of a cold water fishery along the Flathead River. Because no fish tissue was collected, the fishery can be evaluated as no more than Level II Actual Contamination. This produced a Human Food Chain score of 300, capped to 100.

Environmental Threat Targets

- The OR impacts the Bull trout habitat as Actual Contamination Level II, but an insufficient amount of wetlands were documented within the OR to evaluate them. As such, the Environmental Threat portion of the surface water pathway produces a score of 503.33, capped at 60

The surface water migration pathway is a combination of three components: 1) drinking water threat; 2) human food chain threat; and 3) the environmental threat. Therefore, the score for the surface water migration pathway, using the assumptions as described above, is capped at 100.

Soil Exposure:

Although the bulk of the Site is inaccessible and has limited recreational use, the size of the sources does impact the pathway value. The presence of contaminants in uncapped sources produces an OR value of 550; however, without contamination both on residential property and within 200 feet of the house, the residential population portion of the soil exposure pathway has been evaluated only for workers who perform operation and management tasks. The nearby residents are considered in the nearby population portion of the pathway. These factors generate a soil exposure score of 3.40.

Air Migration Pathway:

No documentation of the collection of air samples or a direct observation of an air release is known to exist, nor have any sources of gas been identified post closure, therefore, the air migration pathway was not evaluated.

Site Score

The overall site score for the Site as described above yields a site score of 59.81, based on the observed release to groundwater of cyanide; the presence of actual contamination at Level II; and the presence of a Level II fishery and Level II sensitive environment maximize the surface water pathway score. The remaining two pathways contribute negligibly to the score unless contamination of residential soils could be documented. The pathway and site scores are shown below:

Groundwater pathway:	65.54
Surface water pathway:	100
Soil exposure:	3.4
Air pathway:	0.0
Site score:	59.81

Considerations

A concern for the site is the fact that there is no record of what wastes were put into the landfills and that there is no chemical analysis of wastes from within the landfills. The monitoring wells immediately downgradient were used characterize the wastes, but this data is not supportable for an HRS package scoring. If the landfill and waste pond source is removed, arsenic and cadmium become the primary contaminants driving the score, reducing the groundwater pathway to 20.98 (no longer sufficient by itself to score the site), but producing no score changes in the other three pathways. The score for this second scenario is shown below:

Groundwater pathway:	20.98
Surface water pathway:	100
Soil exposure:	3.4
Air pathway:	0.0
Site score:	51.12

Attachments:

CFAC SR Data
CFAC SR scenario 2